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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/673,862	09/30/2003	Axel Becker	00169.002716.	1364

5514 7590 03/08/2007	EXAMINER	
FITZPATRICK CELLA HARPER & SCINTO	MOTSINGER, SEAN T	
30 ROCKEFELLER PLAZA	ART UNIT	PAPER NUMBER
NEW YORK, NY 10112	2624	

SHORTENED STATUTORY PERIOD OF RESPONSE	MAIL DATE	DELIVERY MODE
3 MONTHS	03/08/2007	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

	Application No.	Applicant(s)
Office Action Summary	10/673,862	BECKER ET AL.
	Examiner	Art Unit	
	Sean Motsinger	2624	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE <u>3</u> MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.
- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1) ☐ Responsive to communication(s) filed on <u>9/30/2003</u>.
2a) ☐ This action is **FINAL.**   2b) ☒ This action is non-final.
3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4) ☒ Claim(s) <u>1-33</u> is/are pending in the application.

    4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5) ☐ Claim(s) _____ is/are allowed.
6) ☐ Claim(s) <u>1, 7-13, 18, 19 and 31-33</u> is/are rejected.
7) ☐ Claim(s) <u>2-6, 14-17, 20-27, 28-29</u> is/are objected to.
8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9) ☐ The specification is objected to by the Examiner.
10) ☒ The drawing(s) filed on <u>30 September 2003</u> is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.

    Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

    Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

    a) ☒ All   b) ☐ Some * c) ☐ None of:

        1. ☒ Certified copies of the priority documents have been received.

        2. ☐ Certified copies of the priority documents have been received in Application No. _____.

        3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

    * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO/SB/08)
    Paper No(s)/Mail Date <u>3/24/2004, 4/26/2006, 1/25/2005</u>.

4) ☐ Interview Summary (PTO-413)
    Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____ .

Rejections Under 35 U.S.C. 101

35 U.S.C. 101 reads as follows:

Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

1.   Claim 33 is rejected under 35 U.S.C. 101 because the claimed invention is directed to non-statutory subject matter. Claim 33 is directed only to data, which is non-statutory subject matter. *See MPEP 2106.20 "Nonfunctional descriptive material that does not constitute a statutory process, machine, manufacture, or composition of matter and should be rejected under 35 U.S.C. 101. Certain types of descriptive material, such as music, literature, art, photographs, and mere arrangements or compilations of facts or data, without any functional interrelationship is not a process, machine, manufacture, or composition of matter."*

Rejections Under 35 U.S.C. 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

Claims 1, 7-11, 13, 31, 32, and 33 are rejected under 35 U.S.C. 102(e) as being anticipated by Schwartz et al US 6898323.

2.   Re claim 1 Schwartz discloses a method of compressing a current image of a

sequence of images, the method comprising the steps of: (a) transforming the

current image with a predetermined transform to provide a set of transform

coefficients (coefficient values column 19 line 15) ; (b) retrieving, for at least one

transform coefficient of the current image (Dn+1 column 19 line 17), one or more,

but not all, bits of a corresponding transform coefficient of a previously compressed

image of the sequence (D'n column 19 line 23 note this value is the quantized

version of the transform coefficient of the previous image, since it is quantized it has

one or more but not all bits), wherein the corresponding transform coefficient is

truncated at a truncation bitplane (column 19 lines 19-27 note D'n is quantized and

therefore truncated) and the retrieved bits comprise the least significant bit of the

truncated corresponding transform coefficient (column 19 21-27 note that since all of

the bits of the quantized (truncated) D'n are used the least significant bit will be

used); (c) setting the at least one transform coefficient of the current image to a new

value that is a function of the retrieved bits (column 19 lines 1-3 coefficients are

forced to the same value which is a function of the retrieved bits); (d) storing one or

more, but not all, bits of the at least one transform coefficient for use in compressing

one or more subsequent images of the sequence (column 19 line 48 note the

quantized coefficient (D'n see column 19 line 23) of the previous frame is stored for

quantization of the next frame); and (e) coding the transform coefficients of the

current image to provide a compressed bitstream of the current image (see column 3

lines 66-67 and column 4 lines 1-3 note that the system is performing JPEG 2000

compliant compression.)

3.   Re claim 7 Schwartz further discloses wherein the predetermined transform is a

discrete wavelet transform (DWT) (see column 3 lines 66-67 and column 4 lines 1-3

note that the system is performing JPEG 2000 compliant compression which uses

the DWT).

4.   Re claim 8 Schwartz further discloses wherein each image of the sequence is

compressed substantially to the same predetermined rate (average desired bit rate

see column 23 line 33).

5.   Re claim 9 Schwartz further discloses wherein the compressed bitstream is

substantially conformant with Motion JPEG2000 (column 20 line 60 note motion

JPEG 2000 is used).

6.   Re claim 10 Shwartz further discloses A method according to claim 7 wherein the

at least one transform coefficient is a member of a subset of transform coefficients,

wherein the subset is selected from the group consisting of: (i) all transform

coefficients of the current image (note if the coefficient belongs to the image it

belongs to the subset containing all transfer coefficients of the image); (ii) all

transform coefficients of predetermined Motion JPEG2000 code blocks (see column

20 line 28 note all coefficients in the level 1 suband are quantized so at least one

coefficient from any predetermined code block will be quantized); (iii) all transform

coefficients in the level 1 subband (see column 20 line 28 note coefficients in the

level 1 suband are quantized); and (iv) all transform coefficients in the level 1, 2 and

3 subbands (see column 20 line 28 note coefficients in the level 1 suband are

quantized).

7.   Re claim 11 Schwartz discloses wherein, in said storing step, the bits of the

transform coefficients of the current image are stored in a compressed form (column

19 line 48 note the quantized (compressed) coefficient (D'n see column 19 line 23)

of the previous frame is stored for quantization of the next frame).

8.   Re claim 13 Schwartz discloses wherein each image of the sequence is

decompressible independently of the other images (note this is a characteristic of

motion JPEG 2000).

9.   Re claim 31, claim 31 is directed to means for accomplishing the method of claim

1 which invokes 35 U.S.C. 12 6th paragraph. The means from the specification is

interpreted to be computer and appropriate software configured to perform the

method of claim 1. Schwartz also discloses performing his method on a computer

system with appropriate software (see column 28 lines 60-65).

10.   Re claim 32 Claim 32 is directed a computer program product comprising

machine-readable program code recorded on a machine-readable recording

medium, for controlling the operation of a data processing apparatus on which the

program code executes to perform the method described in claim 1. Schwartz

discloses performing his method in software (see column 28 line 62) which must be

stored on some computer readable medium.

11.   Re claim 33 Schwartz discloses a compressed sequence of images wherein at

least one image is compressed using the methods of any one of claims 1 to 27.

When this claim depends from claims 1, 7-11, 13, 31, and 32 rejected above,

performing the method of Schwartz as shown above will provide the compressed

sequence of images.

Rejections Under 35 U.S.C. 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all

obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set
> forth in section 102 of this title, if the differences between the subject matter sought to be patented and
> the prior art are such that the subject matter as a whole would have been obvious at the time the
> invention was made to a person having ordinary skill in the art to which said subject matter pertains.
> Patentability shall not be negatived by the manner in which the invention was made.

12.   Claim 12 is rejected under 35 U.S.C. 103(a) as being unpatentable over

Schwartz in view of Anderson et al US 5790705.

13.   Re claim 12 Schwartz discloses all of the steps of claim 1. Schwartz does not

disclose wherein the truncation bit-plane is a function of sensor noise. Anderson

discloses wherein the truncation bit-plane (quantization column 3 line 37-38 is a

function of sensor (CCD column 3 line 38) noise. The motivation to combine is to

"eliminate quantizing artifacts" (column 3 line 41 also see column 3 lines 27-30).

Therefore it would have been obvious to one of ordinary skill at the time of the

invention to combine the two references to reach the aforementioned advantage.

14.   Re claim 33 Schwartz discloses a compressed sequence of images wherein at

least one image is compressed using the methods of any one of claims 1 to 27.

When this claim depends from claims 12 rejected above, performing the method of

Schwartz as shown above will provide the compressed sequence of images.

15.   Claims 18-19 are rejected under 35 U.S.C. 103(a) as being unpatentable over

Schwartz in view of Tubman, *"High performance Scalable Image Compression with

EBCOT"* Proceedings of the 1999 International Confrence on Image processing Vol

3 p. 344-348, 1999 in further view of Tzannes et al. USPGPUB 20040047511.

16.   Re claim 18, please note that provisional application 60394820 of which Tzannes

is a continuation was included by reference and clearly the information in provisional

application has support in the provisional application. Schwartz discloses all of the

steps of claim 1, Schwartz does not disclose wherein the set of transform

coefficients is arranged in a set of blocks and the method further comprises the

steps of: determining truncation points of the blocks in the compressed bitstream of

the current image, and truncating the compressed bitstream of the current image at

the determined truncation points to provide a further compressed representation of

the current image. Tubman discloses wherein the set of transform coefficients is

arranged in a set of blocks and the method further comprises the steps of:

determining truncation points (page 344 column 2 Paragraph 3) of the blocks (code-

block page 344 column 2 Paragraph 3) in the compressed bitstream (page 344

column 2 Paragraph 3) of the current image, and truncating the compressed

bitstream (page 344 column 2 Paragraph 3) of the current image at the determined

truncation points (page 344 column 2 Paragraph 3) to provide a further compressed

representation of the current image (Post-compression rate distortion optimization

page 344 column 2 paragraph 3 note the compressed image truncated to optimize

rate i.e. further compressed). The motivation to combine Tubman is to provide "Post-

compression rate distortion optimization" which optimizes rate and distortion for each

code-block. Tzannes discloses wherein a truncation point (bin size page 4

paragraph 2) of at least one of the blocks of the current image is selected according

to the current image and a truncation point selected for a corresponding block of one

or more previous images (page 4 paragraph 2 see note that the truncation point i.e. bin size is selected according to lambda which corresponds to the truncation point of the previous image therefore the truncation point is selected according to the current image and a truncation point selected for a corresponding block of one or more previous images. The motivation to combine Tzannes is that it is "more computationally efficient" (see page 2 paragraph 2). Therefore one of ordinary skill in the art would have found it obvious to combine Tzannes and Tubman with Schwartz to reach the aforementioned advantages.

17.   Re claim 19 Tubman further discloses wherein associated with each block of the current image is a set of rate and distortion points, and wherein the step of determining truncation points comprises the sub-step of: determining the truncation points of the blocks of the current image that minimize a function of the distortion points (see equation 1 page 345 column 2) while a function of the rate points satisfies a rate constraint (yield the target rate page 345 column 2 first paragraph)

18.   Re claim 33 Schwartz discloses a compressed sequence of images wherein at least one image is compressed using the methods of any one of claims 1 to 27. When this claim depends from claims 18 and 19 rejected above, performing the method of Schwartz as shown above will provide the compressed sequence of images.

19.   Claim 28 is rejected under 35 U.S.C. 103(a) as being unpatentable over

Schwartz in view of Taubman US 6,778,709 herein after "Taubman709"

20.   Re claim 28 Schwartz discloses A method of decompressing a compressed

bitstream representative of a sequence of images, wherein the method comprises

the steps of: decoding the compressed bitstream to provide transform coefficients of

a current image in the sequence (see column 2 lines 14 and 15 note that reversing

the encoding steps would include decoding a compressed bit stream to provide

transform coefficiants); retrieving, for at least one transform coefficient of the current

image ($Dn+1$ column 19 line 17), one or more, but not all, bits of a corresponding

transform coefficient of a previously compressed image of the sequence ($D'n$

column 19 line 23 note this value is the quantized version of the transform coefficient

of the previous image, since it is quantized it has one or more but not all bits); setting

the at least one transform coefficient of the current image to a new value that is a

function of the retrieved bits (column 19 lines 1-3 coefficients are forced tow the

same value which is a function of the retrieved bits); and inverse transforming the

current image with a predetermined inverse transform (see column 2 lines 14 and 15

note that reversing the encoding steps would include decoding a compressed bit

stream to provide transform coefficients). Schwartz does not disclose performing the

steps of retrieving and setting in the decompression sequence. Taubman709

discloses performing quantization in the decoding step (see column 5 lines 8-13).

Since flicker is a product of quantization (see Schwartz column 18 lines 64-65) one

of ordinary skill in the art would recognize that flicker reduction should be preformed during decoding if quantization is preformed during decoding. The motivation to combine the teachings is that "encoding and decoding implementations support representation with different maximum bit depths" (see Taubman709 column 5 lines 10-13). Therefore it would have been obvious at the time of the invention to combine Taubman709 with Schwartz to reach the aforementioned advantage.

21.   Re claim 33 Schwartz discloses a compressed sequence of images wherein at least one image is compressed using the methods of any one of claims 1 to 27. When this claim depends from claims 28 rejected above, performing the method of Schwartz as shown above will provide the compressed sequence of images.

Allowable Subject Matter

22.   Claims 2-6 14-17 20-27 and 29-30 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims. Claims 2 and 29 require that in retrieving step only the two least significant bits are received to modify the transform coefficients. Claims 3-7 contain allowable subject matter because they depend from said claim. Claims 14 and 30 requires that in retrieving step only the least significant bit is received to modify the transform coefficients. Claims 15-17 contain allowable subject matter because they depend from claim 14. Claim 20 contains allowable subject matter because Tzannes does not weight a

distortion value corresponding to a truncation point of a previous image. Claim 21

contains allowable subject matter because Tzannes does not weight a rate value

corresponding to a truncation point of a previous image. Claim 22 and 27 contain

allowable subject matter because although the prior art discloses increasing the

number of bits around edges and moving objects (see paragraph 88 Furukawa

USPGPUB 2001/001787) it does not disclose determining only smooth areas around

moving edges. Claims 23-25 contain allowable subject matter because they depend

from claim 22.

Conclusion

23.   Any inquiry concerning this communication or earlier communications from the

examiner should be directed to Sean Motsinger whose telephone number is 571-

270-1237. The examiner can normally be reached on 9-5 M-F.

24.   If attempts to reach the examiner by telephone are unsuccessful, the examiner's

supervisor, Jingge Wu can be reached on (571)272-7429. The fax phone number

for the organization where this application or proceeding is assigned is 571-273-

8300.

25.   Information regarding the status of an application may be obtained from the

Patent Application Information Retrieval (PAIR) system. Status information for

published applications may be obtained from either Private PAIR or Public PAIR.

Status information for unpublished applications is available through Private PAIR

only. For more information about the PAIR system, see http://pair-direct.uspto.gov.

Should you have questions on access to the Private PAIR system, contact the

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assistance from a USPTO Customer Service Representative or access to the

automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-

272-1000.

Motsinger
March 1 2007

SAMIR AHMED
PRIMARY EXAMINER